HW

28/6/21

1) What are the two conditions required for total internal reflection?

Two important conditions for total internal reflection are :-

- Angle of incidence should be greater than critical angle.
- Ray should travel from denser medium to rarer medium

2) A fish in the pond of water appears at a depth of 6cm. What is the actual depth of the fish if the refractive index of air wrt water is $\frac{3}{4}$?

Actual depth = refractive index × apparent depth

$= 3 \cancel{6} \times \frac{3}{\cancel{4}_2} = \frac{9}{2} = 4.5\text{cm}$

3) A rectangular glass slab of thickness 9 cm is placed on a figure. The eye is kept exactly above this slab. If the refractive index of glass is 1.6, then by what distance the figure will appear to raised?

$$\text{Apparent depth} = \frac{\text{real depth}}{\text{refractive index}}$$

$$\text{Apparent depth} = \frac{8}{1.6} = 5 \text{ cm}$$

Normal shift = real depth − apparent depth

= 8 − 5 = 3 cm.